STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FORESTRY

1953

FOREST FIRE REPORT

Ranger	
Assoc. R.	
Dispatcher	M
Clerk	
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Ass't R. #4	
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Foreman	
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STATE CAPITOL

CALIFORNIA DIVISION OF FORESTRY

1953 FOREST FIRE REPORT.

I. CHARACTER AND EXTENT OF THE FIRE SEASON:

Measured in terms of total fire incidence and area burned, the 1953 fire season in California was below average. Measured in terms of fire risk as affected by weather factors, the 1953 fire season in Northern and Central California was average or below average, while, in Southern California, there were numerous periods of prolonged high fire risk extending from May into January of 1954.

Although a first glance of total fire statistics would indicate a near normal or average fire season, closer inspection reveals numerous contrasts and extremes in the 1953 fire season in fire incidence, area burned, and weather.

In the Northern Sierra district the 1953 fire season was later than usual. January, February, and March were warm and dry, but April, May, and June, were wet and cool. The above normal occurrence of precipitation for April and May, and the below normal temperatures of June, were the direct cause for the late opening of the fire season. The lack of any prolonged period of serious fire danger was an outstanding feature of the 1953 fire season in this district. Just as a serious condition was about to begin, weather would alter the situation; an illustration would be the timely and very unusual storm during the last week of August, which brought locally heavy precipitation at many stations throughout the district. September was the most hazardous month of the season, but no serious fire situations occurred, although this September was the warmest since 1908 and the driest since 1945.

Fire incidence in the North Sierra district was 22% below 1952 and 27% below the 1948-52 average. 1953 thus had the lowest fire incidence since 1942. 1953 acreage burned was 50% below last year and 75% below the 1948-52 average. In acreage burned 1953 was the second best year on record, with only 1937 better. The greatest number of fires and acres burned occurred in the second decade of September.

Only three fires reached 300 acres or larger, the largest of which was 1,490 acres.

In the areas covered by the North Coast, Central Sierra, South Sierra, and South Coast districts, weather in general was comparable to that of the North Sierra district. The period April through June 1953 was generally cool and moderately wet, and, as a result of the unusually long period of cool, damp weather, the fire danger remained low until the first of July. July was warm and dry, and particularly acute fire hazard occurred in some areas. August was unseasonably cool with no serious fire danger. September was dry and relatively warm, but no acute fire risk developed. The first part of October had periods of low relative humidity combined with dry northerly and easterly winds, but this situation was abated by rain in the middle and latter part of the month.

The North Coast district experienced a very successful season in 1953. The nearest thing to a serious fire situation in this district was a heavy concentration of lightning in northern Mendocino and southern Humboldt counties on August 12; 54 known fires occurred in Humboldt County and four in Mendocino County, but burned only a total of some 40 acres. Suppression crews were brought into the area from the southern part of the district and broken up into two and three man crews with radios. Planes were then put in the air to spot the fires and guide the crews into them by radio. Use of these crews, plus fine cooperation by locals in the area, contributed to keeping the acreage burned to a minimum.

Fire occurrence in 1953 in the North Coast district decreased 36% below 1952 and 30% below the 1948-52 average, and was the best year since 1948. Acreage burned in 1953 decreased 71% below 1952 and 73% below the 1948-52 average. Acreage burned was the least since 1942 and the fifth best year on record. Fewer acres were burned in 1942, 1940, 1937, and 1933. The greatest number of fires occurred during the second decade of August, but the greatest acreage was burned in the second decade of July. Thirteen fires reached 300 acres or more, the largest of which was 2,500 acres. Notable is the fact that Mendocino County, normally a county of high

fire occurrence and large area burned, had no Class E fires this year.

The Central Sierra district also experienced a very successful fire season, although the latter part of February brought a number of pre-season fires. Some 41 fires burned over 800 acres during the month of February, the majority of which occurred on the three day holiday of February 21, 22, and 23, with many people burning debris because of the clear weather. High winds, preceded by some 38 days with no precipitation, took many of these debris fires out of control.

Fire incidence in the Central Sierra district decreased 25% below 1952 and 25% below the 1948-52 average, and was the best year since 1942. Acreage burned decreased 48% below 1952 and 52% below the 1948-52 average. Acreage burned was the lowest since 1940 and the third lowest on record. Less acreage burned in 1940 and 1937. The greatest number of fires in the Central Sierra district occurred during the first decade of August, while acreage burned was greatest during the second decade of September. Only eight fires were of 300 acres or over, the largest of which was 2,600 acres. Only three of these eight fires occurred in Calaveras County (the largest 860 acres), which usually has a number of large fires each year.

The South Sierra district experienced a fire season which, although worse than last year, was still an average season. The most serious situation occurred in the latter part of July in Mariposa County, where three Class E fires occurred about the same time and burned some 6,000 acres before being controlled. In order to handle this situation it was necessary to bring in some out of district personnel.

South Sierra fire occurrence increased 15% over 1952 and 6% over the 1948-52 average. Total area burned for 1953 was 157% greater than 1952 but 3% below the 1948-52 average. The greatest number of fires occurred in the third decade of June, while the greatest acreage was burned in the third decade of July. There were only five fires of 300 acres or larger, the largest of which was 3,200 acres.

In 1953 the South Coast district had one of its most severe fire seasons on record in terms of area burned, the greatest amount of which occurred in July, although indicative of the dry condition experienced throughout the early part of the winter is the 125 acre fire which started on March 6 in San Mateo County near Butano Forest. Fire danger during July was unusually high in the southern part of this district, with 27 of the 31 days of high fire risk or above. It was under these conditions that Monterey County had five Class E fires in a period of five days. Two of these, which started on July 10, burned 33,500 and 20,900 acres respectively, while the other three burned 640, 3000, and 800 acres. Not only did simultaneous occurrence of these fires seriously deplete the forces of this district, but, at the same time, assistance was given on a 70,000 acre fire burning in the Los Padres National Forest and Santa Barbara County. To staff this series of campaign fires, it was necessary to request considerable assistance from outside the district and the Camp Roberts and Hunter-Liggett Military Reservations.

Fire incidence in the South Coast district was 24% greater than in 1952 and 16% greater than the 1948-52 average. Area burned in 1953 was 81% greater than in 1952 and 86% greater than the 1948-52 average. 1953 acreage burned was the third greatest on record, being exceeded only by 1944 and 1942. The greatest number of fires occurred in the third decade of June, while the greatest amount of acreage (56,000 acres) was burned in the second decade of July. The South Coast district had eight fires of 300 acres or larger, the largest of which was 33,500 acres.

The 1953 fire season in Southern California was prolonged and acute. It was characterized by numerous periods of hot dry weather with high fire danger. Many of these hazardous periods lasted for a week to ten days, considerably longer than normally expected. These Santana conditions occurred periodically during the whole of the fire season from early May until the termination of fire season on

January 12, 1954.

As in the Central Sierra district a number of pre-season fires occurred in February, when 13 fires burned about 300 acres. The largest of these was a 280 acre fire on February 22 in the Cajon Pass area of San Bernardino County. The most severe period, however, occurred during the first week of October, when four Class E fires occurred in two days, burning 9,560, 700, 940, and 4,550 acres before being controlled. The first three occurred in San Diego County, and the latter in Riverside County. All district facilities were strained to meet this emergency, and out of district Division personnel, as well as military assistance from the U.S. Navy and Marine Corps were needed to cope with the situation.

Southern California fire incidence was 76% above 1952 and 73% greater than the 1948-52 average. Occurrence was the greatest since 1942, which is the highest year on record. Acreage burned was 462% greater than 1952 (one of the best years on record) but only 20% above the 1948-52 average. The greatest number of fires occurred in the second decade of June, while the greatest acreage (16,000) was burned in the first decade of October. In spite of the severe weather conditions, and although the district had 22 Class E fires (17 in San Diego County), total acreage was not extreme. The largest fire was 9,560 acres.

STATEWIDE SUMMARY.

The 1953 fire season was one of contrasts and extremes in weather, fire occurrence, and area burned.

The northern half of the State, or the North Coast, North Sierra, and Central Sierra districts, had one of the most successful fire seasons in a number of years in both incidence and area burned. Substantiating evidence of this is the fact that only about 2,500 acres of timber were burned. This is the second lowest timber acreage burned on record, with a smaller acreage burned only in 1937.

The South Sierra district had an average year, whereas the South Coast and Southern California districts had severe fire seasons. Southern California had one of its most prolonged fire seasons, with crews remaining on until January 12, 1954.

In the area of State direct protection responsibility (Zones 1 and 2) fire occurrence was 8% below both last year and the 1948-52 average. Acreage burned was 4% above last year but 25% below the previous five year average.

Although Southern California had the greatest number of Class E fires (300 acres +) since 1943, the State total of Class E fires was the smallest since 1948. On Clarke-McNary areas there were 67 fires of 300 acres or over. These fires burned acreages as follows :

Forested Land	5,092
Non-Timber Producing Watershed	134,689
Non-Forest Lands	7,741

The largest fire in the State was 33,500 acres.

The number of lightning fires was fewer than last year and the 1948-52 average.

The period of greatest fire incidence was the first decade of July. The periods of greatest acreage burned were the second decade of July (63,000 acres) and the first decade of October (24,000 acres).

The South Coast district led the State in total acreage burned, while Southern California had the greatest number of fires.

A brief summary of 1953 weather reveals the following :

January - warmest on record.

February - Driest since 1899, which was the driest on record. At the end of February weather stations throughout the State had recorded from 38 to 70 days without precipitation. In many areas rainfall was about 5% of normal.

March - precipitation below normal.

April - normal.

May - second coolest on record; cooler only in 1933. (Santana conditions in Southern California).

June - fourth coolest on record; cooler in 1923, 1944 and 1952. (Warm and dry in Southern California).

July - normal.

August - Coolest August since 1941 and the fifth coolest on record; cooler in 1911, 1912, 1925 and 1941.

September - driest September since 1937.

October)
)
November) - normal, but with prevailing Santana conditions
) in Southern California.
December)

Period of record for the above data begins with 1897.

The following tables are presented for comparative purposes :

1953
Forest Fires - Zones 1 and 2
State Direct Protection Area

Compared with 1952

	District	Occurrence	Acreage
I.	North Coast	- 36%	- 71%
II.	North Sierra	- 22%	- 50%
III.	Central Sierra	- 25%	- 48%
IV.	South Sierra	+ 15%	+ 157%
V.	South Coast	+ 24%	+ 81%
VI.	Southern California	+ 76%	+ 462%
	Statewide	- 8%	+ 4%

Compared with 1948-52 Average

I.	North Coast	- 30%	- 73%
II.	North Sierra	- 27%	- 75%
III.	Central Sierra	- 25%	- 52%
IV.	South Sierra	+ 6%	- 3%
V.	South Coast	+ 16%	+ 86%
VI.	Southern California	+ 73%	+ 20%
	Statewide	- 8%	- 25%

Annual Forest Fire Statistics

Year	Direct Protection - Zones 1 & 2		Clarke-McNary Areas	
	No. Fires	Burned Acreage	No. Fires	Burned Acreage
1945	2,512	505,221	2,730	510,316
1946	2,643	234,879	2,830	204,823
1947	2,473	256,472	2,669	202,318
1948	1,973	133,223	2,134	124,206
1949	2,608	132,253	2,726	117,020
1950	2,264	303,393	2,556	270,150
1951	2,159	148,360	2,439	137,851
1952	2,263	120,974	2,422	83,967
1953	2,080	125,150	2,214	152,670

All comparative percentages and tables in this section are for Zone 1 and 2 areas of direct State protection responsibility except as noted.

2. PROGRESS IN EXTENDING PROTECTION TO NEW AREAS AND ESTABLISHMENT OF BETTER PROTECTION IN OLD AREAS.

New Areas.

No new areas were added to the California State Division of Forestry direct protection area during 1953.

Old Areas.

Detection.

Detection studies in the Butte Ranger Unit have demonstrated the advisability of moving the existing Lone Pine Lookout about 5 miles northeast to Platte Mountain. This will improve the detection coverage in the higher timbered country with little or no loss to the lower elevations.

1950 Fire Plan Addition:

Three new patrol positions, and three clerical positions advocated in the 1950 Fire Plan were approved this year. Seasonal clerk-typist positions were approved for Yuba, Nevada, and Mariposa Ranger Units, while the new patrol positions were established in Humboldt, Calaveras, and Tulare Ranger Units. This increases the total approved patrol positions to seventeen.

The three patrolmen will work in the following areas:

A. The Honeydew patrolman will work in southwest Humboldt County covering the area from Ettersburg to Petrolia along the Mattole River and the Mattole River watershed.

B. The Westpoint-Murphys patrolman will work in the timbered eastern part of Calaveras County adjoining the National Forest.

C. The Hammond patrolman will work in the Kaweah River watershed in the northeastern part of Tulare County. This area adjoins the Sequoia National Park and includes the main entrance to the park.

The patrolmen are furnished 16' all metal house trailers for flexibility of movement about their patrol areas.

Preliminary negotiations were started for a site for the Pala-Rincon suppression station in San Diego County.

Fire Weather:

During 1953 two additional fire risk indexes developed for the Division of Forestry usage by R.T. Hanna, Western Fire-Weather Coordinator, United States Weather Bureau, were placed in operation. These were for the Lassen-Modoc-Siskiyou area of the North Sierra district, and for San Diego County of the Southern California district. This brings to seven the number of index systems now in use.

Cloud Seeding Experiments:

The desire to produce rain artificially through the process of treating clouds with minute particles of chemical substance has been of interest to scientists and practical experimenters for many years. This interest has been intensified considerably since the development of aircraft to its present state of dependability. Chemicals which can be compounded easily to desired formulas have also become readily available to the researcher and experimenter, and thereby have contributed to the increased interest in cloud seeding.

Much scientific research and study have been undertaken and experiments conducted to learn of a practical method, with adequate control over released natural energy, to assist moisture laden clouds into producing rain over parched agricultural lands and watershed areas. Similar effort has been directed toward preventing damaging summertime hail storms from forming over ripening farm crops. A degree of success has been achieved in this endeavor, and today many small cloud seeding operations are conducted annually throughout the United States in both types of operations.

It is only natural that knowledge gained from such studies and experiments would stimulate an interest in the possibility of reducing to a harmless state

destructive summertime thunderstorms which develop each year over the forested areas of the nation. This is of particular interest to individuals and organizations having a responsibility for forest fire prevention and control.

Scientific studies have been conducted along this line and certain basic data has been published on the subject. Of note are the research projects carried out by the military services, the U.S. Weather Bureau, and the U.S. Forest Service, since 1945.

The California Division of Forestry has been interested for many years in finding a way to reduce fire incidence and the subsequent natural resource losses experienced each summer due to lightning. In July of this year a contract was obtained with a commercial flying service which offered a process designed chiefly toward dissipating cumulus cloud formation prior to the stage in build-up where cloud-to-ground lightning is present. In this process production of rain or snow is incidental to the principal objective of preventing the development of lightning.

During the months of August and September, 1953, when forest fire conditions were most critical throughout the State, six separate cloud dispersing operations were carried out in the Sierra and Coast Range regions of northern and central California. Each operational area covered approximately 2,500 square miles, and required an average of two hours and fifty-five minutes, using one airplane. The entire project, consisting of the six operational areas, covered 15,000 square miles of California's high value timber lands, requiring a total of fifteen hours and fifty-five minutes flying time. It is conservatively estimated that ninety lightning fires were prevented in the area treated.

Cloud conditions were similar in composition at each of the selected sites. Formations were allowed to reach maximum build-up stage before chemical was applied. This usually occurred each day between 2 P.M. and 4 P.M. Moisture content varied throughout the columns from what might be described as "medium" at the lower levels

gradually diminishing to "light" at the topmost elevation.

Experiments were conducted only on cumulus type clouds. The lower levels of the columns were five thousand to twelve thousand feet above sea level; the uppermost levels ranged between twenty thousand to forty thousand feet above sea level. The average for the six tests was 9,833 feet above sea level at the column base, extending upward to 31,166 feet. At two locations columns were tied together at the base by a stratus layer; at the other four sites independent columns were worked on. Presence of electrical cells was detected by instrument prior to the time chemical was applied, and at most sites a few advanced lightning bolts were observed. Columns of cumulus comparable in composition and size were left untreated adjacent to the treated ones for comparing results obtained.

In conducting this work the contractor used a specially equipped modified military type aircraft. The same plane was used throughout the entire experiment.

The size of individual areas treated ranged from eight hundred square miles in Tulare County to six thousand square miles in Lassen County, averaging twenty-five hundred square miles of cloud area for each operation. Flying time ranged from a minimum of one hour and fifteen minutes in Tulare County to a maximum of four hours and fifty minutes in Lassen County; averaging two hours and thirty-eight minutes flying time per operation.

The chemical formula used and the method of application are the property of the contractor, and are not included as a part of this report, but results obtained were as described in the following paragraphs.

Immediately after chemical was applied, usually about fifteen minutes elapsed time, cloud columns would start changing from cumulus to stratus; cloud base would rise slightly, with the upper levels lowering. Moisture content would appear to increase throughout the entire mass. Rain and snow would form and start falling from the upper elevations. Quite frequently, depending on ground temperatures and humidity, precipitation would not reach the ground. Where it did reach the

ground it was always in an intermittent pattern with varying amounts of moisture.

Cloud-to-ground lightning would cease to be present within thirty minutes after chemical was applied. Sheet lightning and static electricity would continue in the resulting stratus formation as long as two hours after treatment started.

Throughout the entire conversion period while the cloud mass was changing from cumulus to stratus, a natural disintegration pattern was observed. The cloud would completely dissipate through a series of intermittent showers of varying degrees of intensity; or would break up into small dry segments, rise to a higher level, and be carried away from the original site by prevailing wind currents. The over-all transition period required to transform a violent appearing cumulus column to harmless overcast or complete disappearance would vary from one and one-half to six hours duration.

Mild wind disturbances were noted on the ground during the transition period, but in no instance did winds become violent or tend to influence the normal course of prevailing high level wind directions. Humidity records were not made, but it is reasonable to believe that moisture content in the air increased down to the ground level. This supposition was borne out by observing the behaviour of a wild fire in one of the experimental areas where rain was present down to the eight thousand foot level, but none reached the ground. Ground temperature readings were not taken, but from conversations with personnel in the treated area it was learned that a noticeable decrease in temperature was experienced.

Cumulus clouds did not re-form in the treated area after disintegration started. This was probably due in a large measure to the late hour of the day that chemical was applied.

The untreated cumulus columns left intact adjacent to the treated ones continued on through their normal development and disintegration cycle of approximately twelve hours duration, starting many forest fires in the process. This situation, compared with the results obtained in the treated area, where no fires

resulted after chemical was applied to the cloud mass, is considered reasonable proof of the effectiveness of the contractor's technique in preventing lightning fires.

Like all operational research undertakings, this particular approach toward reducing or completely eliminating lightning fires deserves serious and continuing refinement of operational techniques before it can be considered a trouble-free element in an existing resource management organization.

The degree of success experienced throughout this experiment, though not complete in many respects, points the way toward another useful forest fire prevention and suppression tool which might well be considered by resource protection agencies and other organizations.

3. IMPORTANT CHANGES IN PROTECTION PLANS, ADDITION OF PERMANENT PERSONNEL, ETC.

Fire Control Training:

Although the position of Training Officer was not filled during the greatest part of 1953 due to the changes in personnel assignments, individual districts and ranger units continued with their separate training programs as in past years.

As a result of safety studies made in 1952, the individual administrative units have been making a closer analysis of the personnel accident reports to determine causes and remedial measures. Two of the districts have taken actual incidents from the reports and, with a cartoon presentation, brought the incidents to the attention of all employees.

Forest Work Camps:

Site acquisition was completed for the Morena Forestry Honor Camp in San Diego County, but construction during the year was limited to site preparation, construction of access roads and telephone line, water development, laying of pipe lines, and some foundations.

In the latter part of the year the lease was signed for the new Mt. Bullion California Youth Authority Camp at McLean Flat, near Mt. Bullion in Mariposa County. With the completion of this installation the present main camp at Coarsegold will be moved to the new site, with only a spike camp remaining at Coarsegold.

Personnel Changes:

In accordance with the 1950 Fire Plan recommendation an additional Assistant Ranger position was added in Humboldt County to secure a more complete accomplishment of the work load by reducing the load of the existing overloaded five Assistant Rangers.

A new Deputy State Forester position was created to head up and coordinate the Division's statewide fire prevention education and law enforcement

activities, and to assist the State Forester with plans, programs, and meetings of the State Board of Forestry.

One new Assistant Technician was added on the Jackson State Forest in the North Coast district.

A number of personnel changes took place during the past year in the top administration of the Division of Forestry.

On May 1, the Chief Deputy State Forester vacancy created by C.R.Clar's appointment as Assistant Executive Officer to the State Board of Forestry was filled by F.H. Raymond, Deputy State Forester from the North Coast district. C.W. Fairbank was transferred from his Sacramento position in charge of the Automotive Section to fill the North Coast vacancy.

In September, State Forester DeWitt Nelson became the Director of the State Department of Natural Resources following the retirement of General Hannum. F.H. Raymond became Acting State Forester, with Fire Control Officer W.D. Winters filling the Chief Deputy position.

In October, William Fairbank was appointed to the new Deputy State Forester position in fire prevention education.

In November, the South Coast district Deputy State Forester vacancy created by C.G. Strickland's retirement, was filled by Lewis Moran, formerly Assistant Deputy in the North Sierra district.

No new classes were established in 1953, although reclassifications took place of a number of existing positions. The Assistant Technicians working in Farm Forestry and Range Improvement in the North Sierra district were reclassified to Forest Technicians. Eight automobile mechanics and heavy equipment mechanics were reclassified to Automotive Maintenance Foremen, with provision for five additional reclassifications when incumbents qualify by examination.

In July almost all classes except Administration received a 5% increase in salary. Administration received a 5% increase in October.

For comparative purposes with other states, the Division of Forestry top (after four years of service) pay grades now are :

DIVISION OF FORESTRY PERSONNEL.

All Functions.

No.	Title	Monthly Salary
1	State Forester	$ 1,000
1	Chief Deputy State Forester	905
11	Deputy State Foresters	782
6	Assistant Deputy State Foresters	644
16	State Forest Rangers, Grade II	584
19	State Forest Rangers, Grade I	530
42	Associate State Forest Rangers	481
107	Assistant State Forest Rangers	436
12	Forestry Trainees (4-Step Range)	341
1	Forest Manager	782
5	Senior Forest Technicians	584
21	Forest Technicians	530
10	Assistant Forest Technicians	436
41	Forest Fire Dispatchers	395
2	Supervisors of Conservation Education	613
6	Forest Fire Prevention Officers	530
12	Forestry Work Project Supervisors	481
72	Forestry Work Project Foremen (Year-long)	395
342	Forest Firefighter Foremen (229 Year-long)	358
252	Forest Fire Truck Drivers (4-Step Range) (40 Year-long)	325
80	Forestry Equipment Operators (44 Year-long)	376
1,179	Forest Firefighters (Seasonal Only)	268
117	Forest Fire Lookouts (Seasonal Only)	281
200	Camp Crew Cooks (33 Year-long)	295

The classes beginning with and below the Forestry Work Project Foremen are called the "Fire Crew Group". The numbers represent those employed at the peak of the fire season. These classes receive a 10% pay increase through the fire season as a standby and overtime bonus in lieu of straight hourly overtime. Other classes receive a 10%, 5%, or nothing for overtime as the title approaches the higher executive classes. The California Division of Forestry now employs a total of some 878 year-long individuals, with about 1,900 seasonal employees added during the fire season peak.

Three deaths of Division of Forestry employees occurred while on duty this year, although only one occurred upon the fire line. A firefighter died from a heart attack while on the fire line in El Dorado County. A dispatcher succumbed to a heart attack in Tulare County, and a Forest Technician passed away from a cerebral blood clot in Mendocino County.

4. FIRE EQUIPMENT AND IMPROVEMENTS:

A. Equipment.

During 1953 (* *) the Division had in operation the following equipment:

Transportation		Firefighting Equipment		Construction and Maintenance Equipment	
Sedans	103	Pumpers		Maintainers	19
Station Wagons	13	Firetrucks	126	Dump Trucks	19
Panels	16	Crewtrucks	250	Cement Mixers	24
Pickups	186	Pickup Pumpers	27	Compressor Trucks	6
Stakesides	115	Bulldozers		Compressor Trailers	11
Jeeps	4	Large	42	Power Wagons	6
		Medium	17	Miscellaneous	12
		Transports			
		Large	29		
		Medium	16		
		Misc. Equipment	56		
		Small Tractor with Fire Plow.	1		
				TOTAL	1,087

* * Up to July 1, 1954 - end of present fiscal year.

During 1953 the following vehicles were received and placed in service:

6	Medium transports	Additional
3	Pickup Pumpers	"
1	Small tractor and plow	"
3	Stakesides	"
1	Pickup	"
1	Compressor Trailer	"
3	House Trailers 16'	"
35	Sedans	Replacement (A portion of these replaced pickups)
8	Pickups	"
9	Stakesides	"
15	Crewtrucks	"
6	Firetrucks	"
2	Jeeps	"
2	4-wheel drive station wagons	"
1	Panel	"
2	Suburbans	"
2	Power Wagons	"

Development and Research.

Our Pilot Model truck development program initiated last year continued with Pilot Model #1, a conventional drive firetruck having a 250 G.P.M. pump, 500 gallon water tank, and seating for a crew of four, being completed early in the year, reviewed by field personnel, and accepted with a few minor changes. Four production units were constructed during the year.

Pilot Model #2 (described in 1952 report), which was completed, field reviewed, and approved last year, was used as a guide to the successful bidder for construction of 10 production units. The original model was placed in service and was highly accepted.

Pilot Model #3 (described in 1952 report), which was rejected by the field reviewing committee, was placed in the field with minor modifications, and from the reports it is not only doing a good job, but appears that it will also be acceptable for production.

Two more Pilot Models are now being developed, #4 - a four-wheel drive crewtruck of extremely short design, to be used in towing a water trailer, hose lay trailer, or backfiring trailer unit. The unit will have a 60 G.P.M. pump, 280 gallons of water, and seating space for five men. Pilot Model #5 is a large four-wheel drive combination fire and crew truck having a 250 G.P.M. pump, 350 gallon water tank, and seating space for four men. Both trucks are in their final stages of construction and will be reviewed by field personnel prior to accepting the final design for future construction.

During the 1953 fire season the Division acquired an Oliver OC-3, 23 H.P. crawler tractor equipped with an Anderson mold-board fire plow, which was assigned to the Central Sierra district and placed in Calaveras County on an experimental basis. A regular crew was scheduled to operate this unit in conjunction with a pumper truck on initial attack within a reasonable travel area. Unfortunately, or fortunately, however you may wish to put it, the incidence in this particular area

was extremely low, and no conclusive data was made available. Several short tests were run under semi-controlled conditions, proving that unit could be used in some areas and under some conditions, producing a reasonably satisfactory fire line.

For the last three years there has been a trend toward the use of bulldozers in the medium class, i.e. Caterpillar D-4 o/e, with a highly mobile transport having an air-powered tilting body. Although there is wide acceptance of this unit, the lack of reliable statistical performance data resulted in a reluctance to place more of them in service until more facts were made available. Early in 1953 the Division, in cooperation with the Forest Service and equipment manufacturers, conducted extensive bulldozer tests on the Angeles National Forest near Saugus.

The tests were made under natural conditions and on natural slopes, with every effort being made to obtain uniform data for reliable comparison. The physical characteristics of the test site may not be applicable to the State as a whole, however it was felt that comparative factors should remain the same in most instances.

Approximately 39 miles of single pass fire line was constructed on slopes from zero grade to plus 30% and minus 60%, through brush which was classified as ranging from light to extremely heavy.

A completed report has not been made, however the following conclusions were reached :

a). The previously accepted rates of bulldozer fire line construction may have been applicable at the time, however the more modern machine has increased the rate of performance to a degree that a new and more complete study should be made

b). The production rate of the medium class bulldozer of recent design is sufficiently close enough to that of the larger machines in all but the heavy cover types to warrant an area study. This is particularly true where travel times are long, as the medium bulldozer, medium transport combination can be moved so much more rapidly.

c). The manufacturers have recognized the need for design modifications applicable to machines operated on steep slopes. At least two of the manufacturers participating in the tests are now offering a longer track frame for bulldozer use on maximum slopes, and are making some research on machine balance, as a result of their observations.

Preliminary tests have been made on the effectiveness of air-borne water dispersal over forested areas in Southern California in a cooperative program of several agencies and manufacturers. The initial results have proved to have sufficien merit to justify continuing research into the coming year on a larger scale.

During the year the Division started a fire hose coupling program at the Iron Mine Honor Camp in the Central Sierra district, with all the necessary machinery and test apparatus required to do a factory standard job. As well as effecting a substantial savings by utilizing old couplings removed from discarded hose, the job is an in-camp work project for inmates under Division supervision during inclement weather periods.

Preliminary work was done during the year on mechanized brushing versus brush hook or axe, utilizing the lighter chain saws now on the market, both electric and gasoline powered. From the few measured observations it would appear to be the solution to a time and labor consuming job. The Division hopes to be able to make a complete study of this in the near future.

A pump testing and development facility was completed at the Davis Shops and Warehouse. This is a modern underground water tank for deep draft with flow meters, scales, etc., for accurate recording of performance data.

B. Improvements:

1. Structures.

a. Equipment Buildings: Eight (8) of these structures were constructed, providing storage for twenty-one vehicles.

b. Equipment Sheds: Six (6) of these structures were constructed, providing summer storage for twelve vehicles. This is a newly designed minimum type structure with open sides for summer storage of vehicles.

c. Warehouses: Two (2) of these structures have been completed at county and district headquarters where storage facilities were inadequate.

d. Barracks: Six (6) of these standard units were constructed, replacing tents, rented buildings, or temporary structures.

e. Kitchen and Messhall: Two (2) of these standard units were constructed at fire control stations, replacing rented quarters and temporary structures.

f. Combination Barracks and Messhall: Two (2) of these standard units were constructed, replacing rented inadequate quarters.

g. Fire Control Stations: Two (2) of these units were constructed, replacing inadequate rented quarters. One (1) was a standard unit, and the other reconstructed from prefabricated metal buildings. These units house under one roof sleeping quarters, messhall and equipment storage.

h. Gas and Oil Houses: Five (5) of these standard units were constructed, replacing old structures or where bulk storage of gasoline and oil will result in economy.

i. Lookout Tower: One (1) of these standard units was constructed to replace an inadequate temporary structure.

j. Radio Repeater Vault: Five (5) of these standard units were constructed on mountain tops to house radio equipment of our own and other agencies' equipment. These units are of pumice block design (both side walls and roof), and will require a minimum of maintenance.

k. Walk-in Refrigerator: One (1) of these units was constructed at a county headquarters where bulk storage of meats and vegetables for distribution to fire control stations would result in economy.

l. County Headquarters: In addition to the other structures listed, a complete county headquarters was completed, consisting of office, equipment building (10 vehicle storage and shop), warehouse, gas and oil house, barracks (18 men), kitchen and messhall, ranger's residence, dispatcher's residence, residential garage (3 car), pump house and unloading platform.

m. Structures remodeled or rebuilt: One (1) barracks was rebuilt. One (1) county office was remodeled and enlarged. One (1) ranger's residence was rebuilt as a result of extensive termite damage. One (1) barracks, no longer used as such, was remodeled into a dispatcher's residence at a county headquarters.

n. Bridges: One (1) steel truss bridge was constructed, replacing a wooden structure damaged by high water.

2. Maintenance and Improvement:

This program was successfully taken care of by Forestry personnel, during the winter months, with the aid of Forestry work camp personnel.

As in recent years, economy is being realized in our maintenance as well as new construction program by the use of shingles, pumice building block, cabinet and mill work, treated telephone poles, power poles and fence posts manufactured with the aid of our Forestry work camp personnel.

3. Roads and Telephones:

Our road inventory at the end of the calendar year 1953 still stands at 3,248 miles. The additional mileage of roads maintained in District III and District V was offset by an equal mileage in District IV that was accepted for maintenance by the County of Mariposa.

Several telephone lines were removed in Districts II, IV, and VI, resulting in a net reduction in our statewide system of 24 miles of telephone line at the end of the calendar year 1953.

4. Land Transactions:

Although we completed the acquisition of only two parcels of land, several other transactions that were commenced last year should be completed early in 1954.

5. Maps:

Five (5) county and administrative maps were completed during 1953 and three administrative maps were revised. Almost one hundred (100) building site plans were brought up to date as much as possible, and an estimated fifty (50)

charts were completed for use by the various sections within the Division. Some map work was also accomplished for the State Soil Conservation Commission.

An improvement has been made regarding the maps used on the lookout fire-finder. Instead of using the old metal disk with the circular map mounted on it, we have now ordered a number of laminated plastic discs with the map enclosed. The lamination consists of a 20 gauge acetate cover through which dust and moisture cannot penetrate to the map. Any information which is of importance can be written on the map and then erased without spoiling the map. This type of map has been very satisfactory. Lookouts in about one-half of the State have been equipped with these maps so far, and it is anticipated that the balance will also be so equipped.

6. Engineering and Planning:

Several new standard structures have been designed to meet the needs of our Division. New construction materials have been utilized for economy or maintenance reduction. Advance planning, as to definite requirement and on the site location of our structures and facilities, is resulting in better operating units.

C. Radio.

To implement the Division's statewide radio network the following equipment table shows the total number of radio units presently in service. No material increase in numbers of units is anticipated to complete the full coverage schedule. There will, however, be the necessity to purchase individual units required to fill in blank areas exposed by our continuing coverage surveys, and to equip individual special service automotive equipment which will be added as time goes on.

For the coming year emphasis will be placed on preventative service maintenance and improved use of existing equipment.

V.H.F. Equipment -- State Owned:

Type	No.
Base Stations	38
Mobile Relay - Mtn. Top	33
Mobile Relay - Trailer Unit	7
Portable	109
Mobile	707
Handie-Talkies	438
Total	1,332

L.F. Equipment -- State Owned:

Type	No.
Base	13
Portable	18
Mobile	3
Handie-Talkies	7
Total	41

County Owned Equipment under Use Contract to the Division of Forestry.

V.H.F.

Type	No.
Base	1
Mobile Relay - Mtn. Top	1
Portable	16
Mobile	116
Handie-Talkies	2
Total	136

L.F.

Type	No.
Base	5
Mobile Relay - Mtn. Top	3
Mobile	32
	40

Grand total of all radio units operated by the Division of Forestry's personnel on Forestry-Conservation frequencies throughout California is 1,549.

During 1953 two district-wide radio surveys were completed, one in the South Coast district and one in Southern California.

The South Coast survey was initiated in 1951 and continued through 1952, with the final report being published in the first part of 1953. The primary purpose of this survey was to determine whether the existing fixed radio communication facilities were located to best advantage, and how most effectively to locate additional facilities. A survey was made from most existing sites and comparative tests were made from other promising mountains. Fourteen sites were tested in all, with the results indicating in general that the existing system would be satisfactor with some changes.

In Southern California the survey was undertaken during the first part of the year in an effort to improve the existing service and remedy certain phase cancellation problems. Twenty-one mountain-top sites were tested for possible mobile relay or remote control base stations, of which five were existing sites. As a result of this survey, personnel of the Division of Communications spent some time in the area in the latter part of the year effecting certain changes as pointed up by the survey.

5. FIRE PREVENTION:

The reduction in the number of man-caused forest fires during 1953, coupled with a levelling off or downward trend during the years since 1947, is an indication that the cooperative Forest Fire Prevention Program begun in 1947 is effective. We have elaborated on the origin and membership of the statewide California Fire Prevention Committee in past reports so will omit further historical data. There were a number of organizations dedicated to forest fire prevention in existence before 1947, but no successful attempt had been made to coordinate their activities with each other nor with the various protection agencies in the State. Since 1947 the forest fire prevention program has been coordinated with a resultant cooperative campaign, and it is from that date we are measuring the effectiveness of the program. We make our introductory statement based on this six years of history and recognizing the many conditions which have increased the risks to the wild lands, and might be expected to result in increased incidence.

There is no intent to minimize the efforts of the pioneers in prevention, but rather to point out the gains being made by a vigorous, planned and cooperative method of approach.

We make this summary on a factual basis with full realization that we have a long way to go. There are, however, instances where the implication is present, especially where mention of individual actions by cooperators are made, that the ultimate has been reached. Such is not our belief - it is only a natural result when outstanding cooperation and contributions are in evidence. Cooperation is the key word to Forest Fire Prevention in California; we have and will continue to program with that as a guide line.

Forest Fire Prevention in the Division is coordinated from the State Forester's Office, and all activities mentioned here were participated in by Division personnel. However, records are maintained in three parts so, for ease and accuracy of recording we shall report here under three sections: 1. Activities

of Division Field Personnel; II. Cooperative Forest Fire Prevention Program in Southern California, and III. Statewide Cooperative Education Program.

I. Activity Report of Division Field Personnel.

The talking "Smokey Bear" gained such popularity in 1952 that it became evident wide use would be desirable and effective. We were able to purchase another unit early in 1953 and were still unable to meet many of the requests for schedules. That popularity continued throughout the year and many advance schedules for 1954 were requested. We must again report that the use of this medium was limited only by availability of units. We have made no attempt to estimate the number of exposures through this medium. Effectiveness is evidenced by the reactions of children to the entire Forest Fire Prevention Program as represented by "Smokey Bear."

Motion picture films, from our central library, again this year were used as an aid in fire prevention at meetings with adult and youth groups. Films from the library were also used in personnel training. Several new films were added to the library during the year.

Booths and other displays at County Fairs and at the State Fair were effective contributions to the program. Several portable exhibits were developed and moved around for many showings. Many of the exhibits were presented in cooperation with other protection agencies, especially with the U.S. Forest Service and Los Angeles County Fire Department. In addition to displays at County Fairs and through interest by Western Fairs Association, Division personnel cooperated with Fair Managers to develop other fire prevention activities at the County Fairs.

Field men participated this year more than ever in the activities of the California Fire Prevention Committee by cooperating with local representatives of cooperating members of the Committee. As a result, localized programs were developed and many printed materials were designed and produced for use by local cooperators and protection agencies.

Elsewhere we will report on statewide activities in the use of press, radio, television, and motion pictures, but increased use of these media for Forest Fire Prevention Programs in the areas where the Division's field men operate, needs mention here. Although it is, of course, impossible to determine quantitatively the national, statewide, and local effect of contact by these media upon the public, Division field men maintain close liaison with all of these. The results of these contacts can be measured by the extensive use of advertising copy, editorials, and news items in the press; the increased number of spot announcements, and live programs on radio, especially in the use of materials by television stations, and the intensive use of trailers in independent motion picture theatres.

The Department of Natural Resources is making a motion picture based on the activities of the Division of Forestry, and field personnel have assisted in the production of this along with several short features filmed by cooperating television stations.

The hazard reduction program continued and cooperative projects with the Division of Highways, railroad companies, county road departments, timber operators, farmers, and others have resulted in the abatement of many hazards. These activities are indicated in the statistical summary. Two hundred pounds of DuPont's C.M.U. Weed Killer was purchased and applied as test for effectiveness in roadside hazard reduction in the Central Sierra district. Some 14 lineal miles of roadside were treated in this manner. Photographic and other records have been kept of the project, but additional time is necessary before a definite report can be made on the results.

During the past winter work was undertaken upon two major firebreaks in San Diego County ----- the Julian-Sunrise highway firebreak and the Lyons-Lawson Valley road clearing. The Julian-Sunrise highway firebreak extends for a distance of some seven miles along the desert rim and in most places is 300 feet in width. The Lyons-Lawson Valley road clearing is about 14 miles in length and in part has

been treated with a soil sterilization agent. Both of these are cooperative projects financed by the County of San Diego and recommended by the San Diego Citizens Committee Study Group.

The following statistical report is submitted as a summary of field personnel activities during 1953.

A. Newspaper Publicity.

1. Made 8,344 contacts with the press which resulted in editorials, fire news, and other prevention copy.
2. Made 1,202 news releases.
3. Made 419 contacts with press which resulted on 282 dropins and 137 sponsored advertisements.

B. Radio Publicity.

1. Participated in 235 radio presentations (talks, interviews, and programs).
2. Presented material for 522 short announcements.

C. Visual Education.

1. Distributed 926,673 pieces of printed material including posters, leaflets, pamphlets, stickers, etc.
2. Arranged for 551 displays in store windows, theatres, and public buildings.
3. Made 1,291 postings on Division of Forestry 4' x 8' highway right-of-way roadside signs.
4. Displayed 75 floats and/or equipment which was viewed by 449,235 people.
5. Made 75 exhibits at fairs which were viewed by 1,131,120.

D. Group Contacts.

1. Presented 915 programs with and without films which were attended by 47,187 adults.
2. Presented 1,104 programs with and without filmes attended by 85,248 children.

E. Training.

1. Held 1,002 training programs with an attendance of 22,311.

F. Personal Contacts.

1. Made 233,783 personal contacts at fair booths and equipment exhibits.
2. Made 113,340 contacts during normal work day.
3. Made 45,373 personal contacts during 27,314 man-hours spent on patrol duty.

G. Permits.

1. Issued 64,366 regular burning permits.
2. Issued 691 range improvement permits.

H. Inspections.

1. Sawmills - 1,098.
2. Other mills - 174.
3. Logging operations area - 1,655.
4. Industrial areas (other) - 521.
5. Dumps (public and private) - 1,238.
6. Public areas (recreational, school, etc.) - 920.
7. Residential areas (farm and mountain) - 27,512.
8. Mechanical equipment (farm, logging, construction, etc.) - 3,561.

I, Hazard Reduction.

a. Rights-of-way.

1. State and county highways (disced, burned, or treated)- 1,931 miles
2. State and county highways (disced, burned, or treated, in cooperation with others) - 1,836 miles.
3. State and county highways (disced, burned, or treated by others) - 4,345 miles.
4. Railroads fireproofed (cooperative) - 1,211 miles.

b. Industrial Areas.

1. Cleanup compliance at sawmills and other mills - 612.
2. Cleanup compliance in logging and other areas - 1,090.

c. Other Areas.

1. Cleanup and fireproofing of dumps - 590.
2. Public areas - 660.

II. Inventory of Existing or Potential Hazards.

A. Roadside.

1. State highways - 4,787 miles.
2. County highways - 14,054 miles.
3. Railroad - 2,448 miles.

B. Industrial Areas.

1. Sawmills - 741.
2. Other mills - 238.
3. Logging operational areas - 1,004.
4. Miscellaneous industrial areas - 5,037.

C. Other Areas.

1. Dumps (public and private) - 898.
2. Recreational - 787.
3. Commercial - 958.
4. Schools - 1,148.
5. Rural - mountain dwellings - 189,706.
6. Ranch - farm properties - 98,503.

The following statistical record lists locations, causal agents, and causes of the man-caused forest fires occurring in the Division of Forestry's direct protection responsibility area (Zones 1 and 2).

Numbers	Locations	%
558	Roadside	28.9
96	Logging and Lumbering Areas	5.0
801	Wildlands	41.5
255	Dooryards	13.2
82	Cultivated Areas	4.2
40	Railroads	2.0
42	Dumps	2.2
58	Miscellaneous	3.0
1,932		100.0

	Causal Agents	
293	Rancher-Farmer	15.2
203	Tenant	10.5
212	Childfen	11.0
476	Traveler	24.6
91	Forest Product Worker	4.7
160	Hunter	8.3
33	Fisherman	1.7
59	Recreationist	3.1
72	Railroad	3.7
333	Miscellaneous	17.2
1,932		100.0

Numbers	Causes	%
831	Smoker-Matches-Tobacco	43.0
139	Debris Burning (Non-permit)	7.2
252	Debris Burning - Permit escape (land clearing, incinerators, range improvement, trash burning)	13.0
104	Vehicle	5.4
26	Railroad - mechanical	1.3
204	Incendiary	10.6
9	Logging-Slash	.5
26	Sawmill Burner	1.3
30	Power Line	1.6
57	Campfires	3.0
61	Blasting, spontaneous combustion, stationary engine, welding, structural.	3.1
193	Miscellaneous	10.0
1,932		100.0

II. Cooperative Forest Fire Prevention Program in Southern California.

The 1953 Fire Prevention Education Program was discussed and approved by the Forest Fire Prevention Steering Committee of Southern California at their meeting on April 17. This Committee, composed of representatives of the Angeles, San Bernardino, Cleveland, and Los Padres National Forests, Los Angeles County Fire Department, Ventura County Fire Department, Santa Barbara County Fire Department, Los Angeles City Fire Department, the Conservation Association of Southern California, and the California Division of Forestry, serves as a clearing house and facilitates the exchange of ideas.

By May 7, when the Southern California meeting of the California Fire Prevention Committee was held at Los Angeles, lack of normal late winter and spring rains had resulted in the fire season being well on its way with over 100 per cent increase in fire occurrence for this period. Newspaper headlines for the day of the meeting indicated over 310 fires in Los Angeles, and it was recognized by all concerned that the Campaign would have to be intensified. The California Fire Prevention Committee again played a leading part in the over-all program. Sections on Utility and Transportation, Land Use--Information and Industry, and Organizations

all had many recommendations and followed through with excellent cooperative programs. Particularly outstanding was the work done by the railroads and utilies.

Press.

In addition to receiving fine cooperation through the use of ad-mats and material supplied by the National Campaign, particularly good cooperation was received on coverage of major fires. At the spring meeting of the Steering Committee, it was agreed to attempt to have a man set up on major fires to handle press, radio, and television coverage. This proved most effective as not only good fire coverage resulted but prevention was also stressed whenever possible. Many agencies again joined in cooperative releases. The Weather Bureau continued to issue modified fire danger ratings and their weather forecasts which were given widespread use by the newspapers. Many fine editorials and cartoons were used.

Among the many companies giving fire prevention plugs in their consumer and employee magazines were Land Title Insurance Company, Southern California Edison Company, Pioneer Rubber Mills, Pacific Electric Company, Pacific Telephone and Telegraph Company, Los Angeles Department of Water and Power, and many many others.

Radio and Television.

Radio and television cooperation was even increased over the fine work done in past years. Two spot announcements per week were again prepared for forwarding through the Conservation Association of Southern California to the members of the Southern California Broadcasters Association and the Television Broadcasters of Southern California. These were supplemented by weekend weather forecasts submitted by the Conservation Association to the radio stations in Los Angeles area. Field representatives of the various agencies also supplied local materials to the stations in their areas. Recorded announcements, slides, ballops, tellops, flip cards and posters were provided to the stations and given extensive use.

Very excellent coverage on going fires was given by the radio and television stations. Particularly outstanding was Station KTTV, Channel 11's, remote

on the Angeles National Forest fires. These remotes were sponsored by the General Petroleum Corporation and stressed not only the suppression action but pointed out the need for forest fire prevention in protecting our natural resources. The National Broadcasting Company sponsored a series of four, one-half hour radio shows on their national network. These dramatic plays were based upon four fires in various parts of the United States, and, again, the need for fire prevention was stressed. Much credit should be given to Mr. Harry Bubeck, Pacific Coast Manager of NBC Radio Program and Public Affairs Department, for producing this fine radio series. Many fine fire prevention plugs were given on shows originating in the Southern California area. Three one-minute television films were produced under the direction of the California Division of Forestry and supplied to all stations. These films, in addition to those supplied in past years were given widespread use. In cooperation with the Los Angeles Federated Women's Clubs, three radio programs were presented in Pasadena by the Angeles National Forest, Los Angeles County Fire Department, and the California Division of Forestry.

Motion Pictures.

Three forest fire Prevention trailers were prepared. These were a combination of live action and cartooning. Three trailers were released by the Fox West Coast Theatres. The 100 prints supplied of each trailer were actually used until worn out, resulting in an exposure of a fire prevention message to many thousands of persons in California. In addition to the Fox West Coast Chain of Theatres, many Independent Theatres were also supplied with the films with an indication that additional prints will have to be prepared to keep up with the demand in this field. Motion Picture Producers Association of America continued to support our program in the effort to include good fire prevention where possible in films by producers.

Extensive use of films from our library was given by schools and service clubs. Many private companies have purchased fire prevention films for use in their

employee training and customer relationship programs. A number of films cleared for television use were supplied the new USC Educational Television Station, and this Station has indicated it will be able to use everything we have available cleared for television use.

Distribution of Material:

453,246 pieces of fire prevention material were distributed through the Coordinator. This figure is somewhat less than that of previous years due to the fact that the large bulk of material distribution is now handled through the California Fire Prevention Committee mailing list direct from Sacramento. By handling the majority of distribution in this manner much duplication has been avoided. Also, this figure does not include car cards distributed directly through the Advertising Council. Over 2,000 such car cards are used each year by buses and street cars in the Los Angeles area alone. One of the outstanding cooperators in the distribution of materials was the Pacific Telephone and Telegraph Company. They again printed many thousands of booth cards, vehicle cards, and window displays. Among the many others participating in the distribution of materials were General Petroleum Company, Southern California Edison Company, Los Angeles Department of Water and Power, Boy Scouts of America, Los Angeles Clearing House Railroads, and Pacific Electric Company, and members of the California Motor Truck Association.

Many thousands of bookmarks and blotters were distributed through public and private libraries. Members of the California Laundry Owners Association again used thousands of leaflets and blotters as bundle stuffers and placed posters on delivery trucks. Many local water companies included leaflets and blotters with their water bills.

Roadside Signs and A Boards:

Leaders in this field were oil companies and automobile clubs and outdoor advertising companies. Major Military Installations in the Southern California area posted roadside signs as a fire prevention measure.

Exhibits and Displays:

One of the highlights of the season was the part taken by the forest agencies in assisting with the Conservation Program at the National Boy Scout Jamboree on the Irvine Ranch. A special exhibit was constructed showing fire control tools, weather stations, forestry and forest management tools, nursery stock and tree planting, forest products and their uses, forest cover and its effect on water runoff, fire prevention, and many other phases of forestry work. Over 30,000 Boy Scouts and leaders from all over the U.S. and foreign countries were taken on an approximately twenty minute tour and lecture of the exhibit. This exhibit was in addition to the fire protection and fire prevention at the Jamboree supplied by the California Division of Forestry. Our Division, in cooperation with the Los Angeles County Fire Department, U.S. Forest Service, and the Conservation Association of Southern California prepared several special exhibits. At the Los Angeles County Fair last year's exhibit was remodeled and again proved very popular. Exhibits were also placed at the Great Western Livestock Show, Sportsman's Show, Health and Safety Conference and various public schools.

Extensive use of window and counter displays was made by the Southern California Automobile Club, Chambers of Commerce, and Kiwanis Club members. A display prepared by the California Edison Company was used at many public gatherings and commercial offices.

The talking Smokey Bear purchased by the Conservation Association of Southern California was in almost constant use participating at fairs in Orange County, Riverside County, San Bernardino County, and Los Angeles County. Many special tapes were prepared for him. One such special tape for railroad use proved very popular when Smokey was placed for approximately nine days at the Los Angeles Union Passenger Terminal. Many thousands were greeted by Smokey.

Printed Forms and Salesbooks:

Twelve million restaurant checks with a fire prevention message on the back were prepared and distributed by the Moore's Business Forms Corporation. It is impossible to accurately judge the over-all effect of this one phase of cooperation alone, but many millions of people have been reached through this means.

Miscellaneous:

The many cooperators assisting in the program are too numerous to mention, but special credit should be given to Mr. Russell Eller of Sunkist Growers, who devotes much time as Coordinator of the National Cooperative Fire Prevention Campaign, and to Foote, Cone and Belding, volunteer advertising agency for the National Campaign, for the fine work they have done, not only in developing the over-all program, but assisting on a local level as well. Also lending a hand have been Advertising Club of Los Angeles, Los Angeles Chamber of Commerce, Conservation Committee, Southern California Conference of Fire Prevention Inspectors, Southern California Fire Chiefs' Association, Kiwanis Club, Elks Club, American Legion, Los Angeles Downtown Businessmen's Association, West Coast Lumbermen's Association, and many others.

Much interest has been displayed on the part of school officials at all levels in participating in our program, and this field should develop into one of the major parts of the program in future years. Considerable time was spent with several major companies in planning longe-range programs of conservation and fire prevention that will develop in 1954 and 1955.

STATE-WIDE EDUCATIONAL PROGRAM.

The California Fire Prevention Committee had two meetings in 1953, on May 5 in San Francisco and on May 7 in Los Angeles. The same programs were discussed at both meetings, but as a result of two meetings more people were able to attend. An active part was taken in both meetings by representatives of business, industry, public utilities, transportation, clubs, governmental agencies, conservation groups, and individuals.

Awards for outstanding public service in the field of Forest Fire Prevention were presented to the Pacific Gas and Electric Company and to the Southern California Broadcasters Association.

A very large number of contributions to the Forest Fire Prevention Program has come to the attention of the State Forester's Office since those meetings. Those action programs have been by members of the Committee, by allied interest, through influence by members and in many cases have resulted from the pattern set through active programs by the members. We shall report as accurately as possible and where names of organizations or individuals are omitted, it will be owing to lack of information.

We feel that this program on a cooperative basis between the Committee and the protection agencies has been successful from the beginning in 1947. As the committee grows in membership and active participation year after year, it becomes more difficult to record and give credit to all cooperators, as the cooperative program is set up in such a manner that we cannot alone report on all activities. While the program is coordinated to some extent through both the U.S. Forest Service Regional Office and the State Forester's Office, it is natural that many actions are taken independently by each organization in the broad educational program. That condition is also true with the County Fire Departments, Kern, Los Angeles, Marin, Santa Barbara, San Mateo, and Ventura. It also exists with such organizations as the Conservation Association of Southern California, Redwood Region Conservation Council, Keep California Green Inc., California Conservation Council, Western Pine Association, California Forest Protective Association, and San Francisco Keep Green Committee. Just as we are reporting on known activities, each of these organizations has been active in forest fire prevention and could add to the list of contributions by cooperators.

During the year over 2,230,000 pieces of forest fire prevention printed materials were distributed by Committee members in addition to those listed previously by the Division personnel and the Cooperative Program in Southern California.

There were also many thousands more produced and distributed by members at their own expense.

An outstanding program was developed by the railroad members of the Committee. The Western Pacific Railroad assigned Mr. E.L. McCann, District Claims Agent, Oroville, California, to work for them and with other railroads in promoting better fire prevention. Mr. McCann, with management of other railroads, developed a program, and as a follow up he travelled many thousands of miles, and spent many man-days making contacts and outlining action programs with District management. Mr. McCann has presented a comprehensive report, but we shall only highlight the program here.

1. Two complete, and another partial round of the State making contacts with district management of all railroads.

2. Talking Smokey Bear for one week in Los Angeles Union Station, two weeks in San Francisco Ferry Building, one week in Sacramento Western Pacific Station, and one week in Sacramento Southern Pacific Station.

3. Spot announcements on the public address system of several through trains on three or more systems.

4. Forest fire prevention copy on dining car menus and other publications.

5. Posting of many posters in stations.

6. Personnel training in fire prevention.

7. Elimination of hazards in public areas.

8. Cooperation with owners adjacent to railroad rights-of-way in the abatement of hazards.

9. Promotion of closer cooperation with protection agencies.

Many other activities resulted, and results can best be noted by pointing out the very sharp decrease in the number of fires attributed to railroads.

In past reports we have mentioned the Redwood Region Conservation Council. Again this year that Council was active, but space does not permit a listing of their activities.

The Keep California Green, Inc. elected new officers and further developed the ground work for an action program in 1954.

The newest addition to fire prevention is the San Francisco Keep Green Committee, organized in 1953 under the auspices of the San Francisco Chamber of Commerce. While the organization was not formed until late in the season, many effective programs were initiated before the fire season ended. With its very competent leadership, added to the interest and enthusiasm its members have displayed, the Committee will be of valuable service to forest fire prevention.

Again, conservation education with forest fire prevention a part, was developed in schoolroom studies. Division personnel worked with authors who have been contracted by the Department of Education to write fourth grade and seventh grade readers.

Press.

The interest in forest fire prevention with the amount of space dealing with the subject in editorials, cartoons, advertisements, news items, features, and in other forms, by the newspapers again contributed much to the campaign. It is not possible to list the papers nor the many contributions, but their continued interest is necessary, and past interest is to be commended.

Again this year, a great many house organs, news letters, personnel bulletins, and other publications used forest fire prevention copy extensively.

Radio and Television.

As the interest by residents in forest fire prevention has become evident, increased activity in the program by radio and television stations has been a forerunner. Through personal interest by management, fire prevention is fast becoming more than a public service - it is becoming a personal responsibility. We feel that air time devoted to this program has reached proportions far beyond that normally required as a public service contribution. The impact from both media is and has been beyond measure, and we wish we were able here to give credit to every station

and every person connected with the stations. That is impossible, but we realize that without that splendid coverage our program would not anywhere near reach the effectiveness it now experiences.

Several new television stations went on the air during 1953 and in each case used available forest fire prevention materials often and effectively. We realize that well planned high-quality production of new materials for television use is an essential high priority job.

Motion Pictures.

In addition to the three trailers produced by the Division, additional prints of trailers and shorts were made available for use in California by the national campaign. This year, more than ever, independent motion picture theatres used those prints in all Districts. Motion pictures continue to be an effective media in Forest Fire Prevention, and production of materials is an important phase in maintaining that position.

Printed Materials.

We have made mention elsewhere in this report about the quantities of printed forest fire prevention materials which have been distributed. Preparation and production of those materials has been chiefly the function of public agencies. The Division prepared, financed, and produced for general distribution during 1953 the following:

(a)	Leaflets	2,000,000
(b)	Windshield stickers	1,000,000
(c)	Smokey Song	500,000
(d)	Postcards	2,500
(e)	Posters	30,000
(f)	Miscellaneous	100,000

Distribution of these materials was made by the California Fire Prevention Committee, Federal, State, and County protection agencies, Conservation organizations, Keep Green Committees, the Military, and other public agencies.

Conclusion.

We have stressed elsewhere in this report the importance of cooperation to an effective Forest Fire Prevention Program. We experienced cooperation again in 1953. It was in evidence statewide, with federal, state, and county public agencies, utilities, business, industry, farmers, ranchers, clubs, labor organizations, civic groups, fraternal groups, veteran organizations, and many others who have a common interest in the protection of our wild lands from destructive fires. We are making progress, and as that cooperative spirit develops and every person accepts a responsibility for the prevention of forest fires, we will minimize the crippling losses from forest fires.

6. LAW ENFORCEMENT.

Routine law enforcement activities of the Division resulted in 1,932 cases investigated, which were resolved either through court action or by other action satisfactory to the State before going to trial. Of this total 163 were criminal cases, 91 were civil cases, with the remaining 1,678 settled administratively. The following table is presented for comparison with the past three year period.

Year	Man-Caused Fires* State Responsibility Area. (Zones 1 & 2)	Criminal Cases	Civil Cases	Administrative Cases
1950	2,105	130	127	1,848
1951	1,858	124	137	1,597
1952	2,058	147	114	1,797
1953	1,932	163	91	1,678

* Clarke-McNary forest fires plus fires occurring in non-Clarke-McNary areas which are the responsibility of the Division of Forestry. Separation of Law Enforcement statistics by area or land ownership is not administratively feasible.

7. INCREASES IN APPROPRIATIONS.

Budget	Estimated 1952-53	Actual 1952-53	Change
Support	$ 9,302,384	$ 9,185,921	- $ 116,463
Other Current Expenses	2,044,683	1,894,326	- 150,357
Total	$ 11,347,067	$ 11,080,247	- $ 266,810
Capital Outlay	$ 938,661	$ 938,661	

Expenditures	Actual	Estimated	Change
Support	$ 9,185,921	$ 9,367,368	+ $ 181,447
Other Current Expenses	1,894,326	2,136,902	+ 242,576
Total	$ 11,080,247	$ 11,504,270	+ $ 424,023
Capital Outlay	$ 938,661	$ 1,676,071	+ $ 737,410

Support:

1952-53.

Actual Salary and Wages for 1952-53 exceeded the estimated amount by $25,125. This was mainly brought about by making an over-expenditure in Fire Control man months rather than an estimated savings. This over-expenditure was more than balanced out by savings made in other categories.

Actual Operating Expenses for the year were within $8,635 of the amount estimated for 1952-53. An increase in cost of Inmate Labor of $40,000 was more than offset by savings in other codes. The major savings were accomplished in Field Services $21,000, and Fire Prevention Education $9,000.

Actual Equipment expenditures for 1952-53 were $93,629 under estimated budget due mainly to a savings in Automotive Equipment ($33,000) and Radio Equipment ($27,000).

Reimbursements for the fiscal year totalled $39,224 more than the amount estimated. This was brought about mainly by an increase in meal costs to employees which brought in an added return of $28,000, and by an increase in the contract with the Bureau of Land Management amounting to $9,500.

Summation of increases and decreases results in a savings of $116,463.

1953-54.

Estimated 1953-54 expenditures for Support are $181,447 above actual expenditures for 1952-53. Salary changes accounted for an increase of $494,971 of which a 5% salary increase is the major factor. An increase of 3 Patrolmen, 1 Assistant Ranger, 127 man months of Lookout, 161 winter man months of Foreman, the substitution of 355 man months of Foreman for a similar amount of fire fighter man months, and a reduction in the estimated salary savings for seasonal personnel account for the major portion of the remainder.

Operating Expenses for the 1953-54 fiscal year show a net decrease over 1952-53 of $343,343. The major factor in this decrease is a reduction of $516,775 in the cost of inmate labor for Forestry Honor Camps. This reduction was brought about by the Correctional agencies absorbing custodial, religious, and education costs in their Operating budgets. The other major reduction is a reduction of $22,763 in the contract cost of Radio maintenance service. These reductions were offset somewhat by an increase of $63,600 in auto operation funds, $37,400 increase in subsistence, $46,200 in maintenance funds, $18,500 for printing, $9,500 for travel, $11,600 for Light, Heat and Power, and various other miscellaneous increases.

Increase in equipment funds of $52,063 over actual expenditures in 1951-52 is due largely to increase of $38,410 in purchase of additional vehicles and heavy equipment, and an $11,726 increase for the purchase of Radio equipment. Change in budgeting Miscellaneous Funds gives an apparent increase of $20,911 in miscellaneous codes; however, this is reflected by a partial decrease in other codes.

Reimbursements estimated for the 1953-54 Fiscal Year are $22,244 over the actual for 1952-53. This is brought about by increases of $31,400 for subsistence reimbursements and $6,200 for overhead charges. These increases are offset by reductions of $5,300 for rents and $10,000 from Office of Civil Defense.

Other Current Expenses:

1952-53.

Other Current Expenses actual expenditures were $150,357 less than estimated. This is accounted for by a savings of $128,065 in Emergency Fire Suppression Funds and $22,292 in Pine Beetle Control Funds.

1953-54.

Increases in Other Current Expenses estimated for 1953-54 total $242,576 over actual expenditures for 1952-53. The increases are composed of $15,219 in allotments to Outside Counties, $128,065 for Emergency Fire Suppression, $22,292 for Pine Beetle Forest Insect Control, and the initiation of $77,000 for the Wild Land Vegetative and Soil mapping project.

Capital Outlay & Savings.

Increase in appropriations for Capital Outlay can largely be explained by increased appropriations for site acquisition of Lookout sites ($50,000), an appropriation of $365,700 for Riverside District Headquarters, and the funds for relocation of two California Youth Authority camps which increased the Honor Camp Construction Program by about $170,000 over the previous year.

Minor construction funds were increased by $40,000 to complete certain existing facilities.

The remaining balance is due to slightly expanded program of major construction to establish permanent Fire Control Stations and the increased costs of construction over the previous year.

8. LEGISLATION.

I. Considerable legislation was enacted by the 1953 session of the California legislature which affected the Division of Forestry. None of it will cause any great change in duties or procedures of the organization, yet, much of it is of vital importance in clarifying and strengthening the statutory foundation which is absolutely necessary for every agency of government.

In the category of laws granting basic authority, the following may be listed:

(a) Section 4440 was added to the Public Resources Code. In part this states that "The State Forester may engage in and demonstrate methods of using, developing, and protecting forest and wild land resources ..... and may enter into agreements for that purpose." This new law gives statutory authority for the Service Forestry program and cooperation with the U.S. Forest Service under the Cooperative Forest Management Act of 1950. It also gives assurance that "show me" trips and other public education projects are endorsed by the legislature.

(b) Section 4445 was added to the Public Resources Code providing that "The State Forester may engage in the survey of soils, vegetation, and forest product: ..... and expend funds and enter into agreements to accomplish this." As a companion to this, $77,000 was appropriated for cooperation during one fiscal year with the University of California, and the California Forest and Range Experiment Station for the purpose of engaging in wild land soil surveys. This work is intended to be a continuous survey and mapping job similar to the recently completed project in Mendocino County.

(c) Section 4014 of the Public Resources Code accepting the provisions of the Clarke-McNary Act was amended to more clearly embrace the entire Act instead of only fire protection work as may have been argued in the original law. The amendment also repealed some rather ambiguous language in respect to the disposition of funds. This amendment gives clear legal authority to the present cooperative

program of production and distribution of forest nursery stock under Section 4 of the Clarke-McNary law.

(d) Sections 4451, 4453, 4454, and 4455 were amended, and Section 4454.5 was added to the Public Resources Code to include plant diseases along with forest insects as menaces to timber and forest growth to be controlled by the State Forester Cooperative effort by the State in the eradication of white pine blister rust is now very clearly endorsed by statutory authority. Formerly authority was contained only in the recurring appropriation bills for that specific purpose.

(e) Sections 4351 and 4352 of the Public Resources Code were amended to liberalize the basic authority for the Division of Forestry to operate forest nurseries. The provision now becomes for the operation of "nurseries" rather than "nursery", and the selling price of stock becomes much less important now that the State Forester may, with Board approval, establish the prices he considers proper, and without particular reference to cost of production.

II. Laws pertaining to police powers were adjusted to current conditions.

(a) Section 4165 of the Public Resources Code pertaining to hazard reduction around sawmills and wood processing plants was amended. The conditions are more liberal for the processor, yet his obligation is spelled out more clearly.

(b) Sections 4155 and 4156 of the Public Resources Code were amended, making more specific and a little more rigid the tool requirements for woods operations. Section 4158 was added, requiring that an extinguisher or shovel must be available where gasoline powered saws are used.

III. The statutes pertaining to the Range Improvement program were codified in Sections 4861-66 of the Public Resources Code, while the Forest Practice Act becomes codified in Sections 4901-4967 of the Code.

IV. Two other laws passed affecting Division of Forestry employees were:

(a) Provision that firemen (including State personnel) shall not be held liable for cost or injury in cases where they use reasonable judgment in aiding or securing aid for persons injured during fires.

(b) The State Board of Control may prescribe rules under which the several departments may obtain life insurance favoring employees flying on official business in all types of aircraft except regularly scheduled passenger flights.

9. PROGRESS MADE IN MEETING FIRE PROTECTION STANDARDS OR OBJECTIVES:

The allowable annual burn as determined by the Division of Forestry for its direct protection area and as also determined for the State's Clarke-McNary lands is .5 of 1% of the area protected. This is 97,513 acres of the 19,500,000 acres qualifying for Clarke-McNary funds. Unfortunately, in 1953 this objective was not attained. Due primarily to the prolonged periods of high risk weather in Southern California and the resultant fire occurrence, 152,670 acres of Clarke-McNary lands were burned throughout the State. Of this total 77,765 acres were burned on Clarke-McNary lands protected by the Division of Forestry. Although these areas burned exceeded the desired standards, they were lower than averages previously established.

There were 2,214 fires upon the California Clarke-McNary lands in 1953. This is the lowest occurrence since 1948, and the second lowest of the past nine years. This would appear to fully substantiate the worth of the vigorous programs of fire prevention education and law enforcement that have been maintained in California in recent years. A direct measurement of the effectiveness of these programs may be had by comparing the current year's record with the record of prior years; the reduction in numbers of fires being used as the quotient of success.

During the past fifteen years population has increased at an annual average rate of 2.3% of the fifteen year average. During the same period, on the 19.5 million acres of Clarke-McNary lands in California, the incidence of forest fires has been decreasing at an annual average rate of 2.1% of the same fifteen year average number of forest fires. As 95% of the forest fires in California are man caused, the previous figures would indicate that we are making consistent headway toward that objective - the minimum fire occurrence possible - in the face of ever increasing population and wild land use.

On the Clarke-McNary lands protected by the Division of Forestry (12.2 million acres, or 62.6% of the California total), there were 1,437 fires, of which 1,317 were man caused. A nine year downward trend is noted in all of the eight major fire causes for fires on these lands except lightning and lumbering operations. Brush burning and incendiarism lead the drop percentagewise, with smoker caused fires following closely with an annual average four per cent decline during the period covered.

10. COOPERATIVE AGREEMENTS FOR PROTECTION OF S & P LANDS:

1. Clarke-McNary Land Protection.

The State Forester contracts, by Cooperative Agreements, for the protection of Clarke-McNary lands with the U.S. Forest Service and six independent counties, as follows:

S & P Protected by the State	12,161,951
S & P Protected by the U.S. Forest Service	5,578,096
S & P Protected by the Independent Counties	1,623,200
S & P within U.S. Forest Service Protection Boundary but requiring no organized protection	42,333
Total	19,405,580

The above figures differ from last year due to a re-analysis as of January 1, 1953, of the S & P land protected by the U.S. Forest Service.

The figures for S & P lands protected by the State and the Independent Counties are those arrived at in the 1950 Clarke-McNary Area and Cost Revision.

The State allots presuppression costs to the U.S. Forest Service with Clarke-McNary and State money for the protection of S & P lands; 13.8¢ per acre is paid at the present.

2. Federal Lands Protected by the State.

Agency	Area Acres	Method of Payment to State
Bureau of Land Management Unappr. Public Domain		
Zone 1	1.228 MM	14¢/acre/year
Zone 2	.538 MM	12¢/acre/year
Other	.330 MM	No Reimbursement
Grazing Lands		
Zones 1, 2 and 3	..690 MM	Fire Cost Reimbursement
U.S. Forest Service	.208 MM	13.8¢/acre/year
Bureau of Indian Affairs	.330 MM	Fire Cost Reimbursement
Other Government	.225 MM	No Reimbursement
Total	3.549 MM	

3. Total Land Area Directly Protected by State:

* Zone I and 2	.....	22,806,000
** Zone 3	.....	10,213,000

* All State, private, and intermingled federal lands which are directly protected by the State and are primary watershed or timber lands, with contigous secondary watershed and grazing lands. (12.162 million acres are Clarke-McNary).

** Rural, agricultural, grazing and wildlands not qualifying as State Responsibility, but which are protected by the State on an actual presuppression cost basis reimbursed by the County concerned. Each county buys protection desired. Protected area differs from last year due to addition of Lake County Schedule A. contract.